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## ASTRONOMICAL OBSERVATIONS IN 1896.

Made by TORVALD KÖHL, at Odder, Denmark.

## VARIABLE STARS.

*Z Cygni.*

January	8:	Z = d. 13: { < d. { > e. 18: = e.	September 26:	{ < c. { > d. 30: id.
February	15:	< e.	October	8: { < d. { > e.
May	5:	< e.		11: a little > e.
	9:	< e.		26: = e.
August	15:	{ > f. { < 26.		28: = e.
	30:	a little > b.	November	4: < e.
September	8:	= b.		7: < e.
				8: < e.

*X<sup>2</sup> Cygni.*

January	8:	{ > a. { < A.	August	15: invisible. 17: id.
	13:	id.	September	26: id.
	18:	almost = A.	October	8: a little < k. 26: id.
	19:	id.		28: id.
May	7:	= g <sup>r</sup> .		
	9:	id.		

*The Stars A and B, near X<sup>2</sup> Cygni.*

January	8:	A < B.	September	3: id. 8: A = B. 26: id.
	13:	A = B.		30: A < B.
	18:	id.	October	8: A < B, Distinct 11: A < B. 26: id.
	19:	id.		28: id.
May	5:	A < B.		30: A = B.
	7:	id.	November	4: A < B. 8: A = B.
	9:	A = B.		
August	15:	A < B.		
	17:	A = B.		
	18:	id.		
	30:	A < B.		
		1897, January 1: A > B. N.B.		

*S Ursæ majoris.*

January	8: S = f. 13: a little < f. 19: = g.	September	3: faint. 4: = g. 8: id.
February	15: id.		26: almost invisible.
March	11: = f. 17: a little > f. 20: > f. 31: < e.	October	8: invisible. 26: almost invisible.
May	1: = d. 9: id.		28: = g.
August	18: = f. 30: a little < g.	November	4: = f. 7: id.

*T Ursæ majoris.*

January	8: T a little > a. 13: > a. 19: a little > a.	September	3: a little > b. 4: id. 8: > b.
February	15: = b.		26: > a.
March	11: = e. 17: id. 20: id.	October	8: id. 26: { < b. { > c.
May	1: invisible. 9: id.		28: almost = c.
August	18: a little > e. 30: { > c. { < b.	November	4: = c. 7: a little < c.

## THE LUNAR ECLIPSE OF FEBRUARY 28TH.

h.	m.		
7	16	P. M.	. . . . . Shadow touching limb of Moon.
	30		. . . . . Shadow touching <i>Sirsalis a. Heraclides.</i>
	33		. . . . . Shadow touching <i>Cap Laplace.</i>
	38		. . . . . Shadow touching <i>Plato.</i>
	40		. . . . . Shadow touching <i>Copernicus.</i>
	42		. . . . . Shadow touching <i>Gassendi</i> East.
	44		. . . . . Shadow touching <i>Gassendi</i> West.
	48		. . . . . Shadow touching <i>Mare serenitatis</i> East.
	55		. . . . . Shadow touching <i>Bessel.</i>
8	9		. . . . . Shadow touching <i>Proclus.</i>

h.	m.		
20	P. M.	.	Shadow touching <i>Tycho</i> East.
46		.	(Maximum) . . . . .
9	17	.	Shadow touching <i>Grimaldi</i> .
	43	.	Shadow touching <i>Copernicus</i> .
	47	.	Shadow touching <i>Heraclides</i> .
	52	.	Shadow touching <i>Cap Laplace</i> .
	57	.	Shadow touching <i>Plato</i> East.
	58.5	.	Shadow touching <i>Plato</i> West.
10	5	.	Shadow touching <i>Aristoteles</i> .
	7	.	Shadow touching <i>Proclus</i> .
	15	.	Shadow touching limb of Moon.

OCCULTATION OF THE PLEIADES.

h.	m.	s.		
8	55	45	.	Immersion of <i>Celeno</i> .
	59	30	.	Immersion of <i>Electra</i> .
9	16	40	.	Immersion of <i>Taygeta</i> .
	23	40	.	Immersion of <i>Maya</i> .
	40	30 (?)	.	{ Immersion of <i>Asterope</i> . Emersion of <i>Electra</i> .
	53	40	.	Emersion of <i>Celeno</i> .
10	5	40	.	Emersion of <i>Taygeta</i> .
	22	50	.	Emersion of <i>Maya</i> .

## SHOOTING STARS.

No.	Time, P. M.	Beginning.	End.	Magni- tude.	Note.
1896.					
1	Aug. 9. 10 <sup>h</sup> 3 <sup>m</sup> 30 <sup>s</sup>	○ ○	○ ○	♀	
2	8 0	237+ 8	234— 3	I	
3	10 20	1+29	1+29		
4	22 0	343+11	335+ 6	3	
5	23 30	300+48	289+40	3	
		292+10	286+ 4	3	
6	33 0	348+18	342+14	2	
7	35 0	270+56	242+75	I	
8	38 20	337+30	330+20	2	
9	39 0	345+65	340+49	♀	
10	42 0	292+ 3	291— 4	I	
11	42 15	294+26	282+10	½©	Fireball.
12	48 10	322+70	306+58	I	
13	50 0	290+52	275+30	2	
14	53 45	245+63	206+58	2	
15	58 10	298+50	288+42	3	
16	59 15	344+43	331+30	3	
17	II 1 0	303+20	294+ 5	2	
18	4 40	25+30	24+14	♀	
19	8 0	303+45	287+29	3	
20	II 10	309—11	301—19	I	
21	18 30	240+33	225+22	3	
22	22 30	307—10	301—16	3	
23	26 0	13+19	3+ 6	♀	Train.
24	31 30	309—17	301—23	I	
25	39 30	27+32	27+22	♀	
26	43 15	288+10	284+ 0	2	
27	50 40	323— 7	312—13	3	
28	51 20	18+32	3+22	¾©	Fireball.
29	56 15	318+50	304+40	2	
30	59 0	66+75	40+86	2	
Time, A. M.					
31	Aug. 10. 12 2 —	328+43	312+32	3	
32	3 —	330+ 2	322— 4	3	
Time, P. M.					
33	10 1 10	339— 2	331—14	⅓	
34	2 50	341+40	324+18	⅓	
35	5 50	295+61	270+34	♀	Train.
36	7 20	0+58	335+50	I	
37	13 0	321+44	305+40	2	
38	13 30	323+ 9	310— 5	⅓	
39	15 0	351+10	340— 5	⅓	
40	18 30	332+56	310+44	I	

## SHOOTING STARS—Continued.

No.	Time, P. M.	Beginning.	End.	Magnitude.	Note.
1896.					
41	Aug. 10. 10 <sup>h</sup> 21 <sup>m</sup> 45 <sup>s</sup>	10+40	359+23	2	
42	25 40	10+25	6+19	1	
43	33 40	10+37	19+40	3	
44	35 0	263+36	243+12	♀	
45	39 0	258+39	244+23	2	
46	44 45	303+ 2	295—I3	2	
47	47 15	293+26	280+ 5	1	
48	50 30	337+ 9	342—I5	2	
49	51 50	348+22	342+13	1	Train.
50	56 50	50+70	64+73	1	
51	57 0	35+29	31+19	2	
52	59 50	303— 8	302—18	1	
53	II 2 20	328—I5	324—23	1	
54	4 0	342+33	331+21	2½	Train.
55	II 50	319— 5	307—I4	♀	Train.
56	14 50	25+34	16+22	1	
57	15 0	266+56	277+42	2½	
58	17 0	40+60	74+64	1	
59	28 0	10+29	1+17	1	
60	35 0	102+45	102+39	♀	
61	35 30	310+30	298+11	2½	
62	37 40	29+16	25+ 6	2½	
63	42 0	346+ 0	339—I4	2	
64	45 0	311+14	301— 2	2	
65	45 20	20+27	42+30	2	Slow, undulated light.
66	58 10	16+46	4+36	♀	Train.
67	12 0 0	26+19	21+ 6	1	
68	Aug. 11. 10 10 30	185+50	195+34	1	
69	II 0	148+50	175+29	2	
70	16 40	183+34	190+22	1	
71	24 50	316+33	292+20	1	
72	27 20	337+37	318+22	1	Train.
73	32 20	339+75	319+59	4	
74	45 10	170+80	160+75	3	
75	55 45	5+36	353+24	2	
76	II 2 30	25+20	23+13	2	
77	4 0	27+55	21+50	2	
78	5 0	10+39	358+30	2	
79	10 0	4+ 9	359+ 4	2	
80	Aug. 12. 9 57 30	. . .	70+70	2	

No. 23 was also observed at Copenhagen ( $356^{\circ} + 30^{\circ} + \rightarrow$   
 $341^{\circ} + 18^{\circ}$ , 1 Magnitude).

No. 28 was also observed at Copenhagen ( $290^{\circ} + 57^{\circ} + \rightarrow$   
 $273^{\circ} + 42^{\circ}$ , 2).

No. 77 was also observed at Copenhagen ( $248^{\circ} + 40^{\circ} + \rightarrow$   
 $254^{\circ} + 27^{\circ}$ , 1 Magnitude).

These three meteors give the following results:—

No.	Beginning.			End.			Real Length of the Path.  $\beta$
	$h$	$\lambda$	$\phi$	$h$	$\lambda$	$\phi$	
		$^{\circ} /$	$^{\circ} /$		$^{\circ} /$	$^{\circ} /$	
23				120	I 23 East.	54 54	
28				98	o 57 West.	55 32	
77	107	I 17 West.	55 43	101	I 27 West.	55 25	35

Odder is situated in  $2^{\circ} 25'$  W. longitude from Copenhagen, and  $55^{\circ} 58'$  N. latitude.  $h$  and  $\beta$  indicate kilometres;  $\lambda$  is longitude from Copenhagen;  $\phi$  is N. latitude.

NOTE.—This paper was accompanied by a drawing of five phases of the occultation of *Jupiter* by the Moon on 1896, June 14.. The drawing is not reproduced here. The radius of *Jupiter* is taken as 9 mm. 2.5 mm. were obscured at  $10^h 42^m 50^s$ ; 8.3 mm. at  $10^h 43^m 10^s$ ; 14 mm. at  $10^h 43^m 30^s$ . The middle time is that of bisection, according to a late note from Mr. KÖHL.

THE COMMITTEE ON PUBLICATION.

#### PLANETARY PHENOMENA FOR MAY AND JUNE, 1897.

BY PROFESSOR MALCOLM MCNEILL.

#### MAY.

*Mercury* is an evening star until May 20th, when it comes to inferior conjunction with the Sun. It passed greatest east elongation on April 28th, and during the first ten days of the month is in very good position for observation, not setting until nearly two hours after sunset on May 1st.